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Etiologies of premature oral aging syndrome

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SUMMARY

Recently, dentistry has been studying and warning about premature oral aging, which correlates that various pathologies, such as caries, periodontal disease, non-carious lesions (NCL), and others, are intensified by modern lifestyles. These lesions are characterized by distinct and multifactorial etiologies. This syndrome affects people aged 20 and older and has been increasingly diagnosed in the Brazilian population. Therefore, this study aims to alert the dental community, pointing out its possible causes in younger populations. The literature review was conducted by searching the book "Síndrome do Envelhecimento Precoce Bucal" (SOARES *et al.,* 2023), and the Google Scholar and bibliographic databases, using the keywords: premature oral aging, dental wear, and mental disorders, in Portuguese and English. Therefore, it is concluded that the etiologies of the Premature Oral Aging Syndrome favor the clinical manifestation of aging in the oral cavity and in the stomatognathic system, presenting a state of clinical non-normality of the oral and adjacent structures, with characteristics incompatible with the physiological/chronological age of the individual, caused by systemic diseases of different origins, accelerated by the influence of some deleterious habits and/or lifestyle.

Keywords: premature oral aging, tooth wear and mental disorders.

ABSTRACT

Recently, Dentistry has been studying and warning about premature oral aging, which correlates that several pathologies, such as Caries, Periodontal Disease, Non-Carious Cervical Lesions (NCCL) and others are intensified by the current lifestyle. These injuries are characterized by distinct and multifactorial etiological factors. This syndrome affects people aged 20 or over and has been increasingly diagnosed in the Brazilian population. Therefore, this study aims to alert the dental community, pointing out its possible causes in the younger population. The literature review was conducted by searching the book "Síndrome do Velhecimento Precoce Bucal"

(SOARES et al., 2023), and the Google Scholar and bibliographic databases, using the keywords: premature oral aging, tooth wear, and mental disorders, in Portuguese and English. Therefore, it is concluded that the etiologies of Premature Oral Aging Syndrome favor the clinical manifestation of aging in the oral cavity and stomatognathic system, presenting a state of clinical abnormality of the oral and adjacent structures, with characteristics incompatible with the individual's physiological/ chronological age, caused by systemic diseases of various origins, accelerated by the influence of some deleterious habits and/or lifestyle.
Keywords: premature oral aging, tooth wear and mental disorders.

1. INTRODUCTION

The etiologies of premature oral aging - EPB are diverse, therefore needs assistance not only from professionals in the field of dentistry, but also from other various areas of health, however dentistry has recently begun to study the premature oral aging, as he noticed that many young patients (25-30 years old) were presenting clinical features which were normally diagnosed in people with

over 70 years. The presence of non-carious lesions (NCL), tooth sensitivity, loss premature tooth decay and discoloration are some of these characteristics. The public is increasingly young, with lifestyles associated with erroneous habits such as eating, radical diets and emotional imbalances contributing to premature aging of teeth and a impaired oral health (SANTOS and CONFORTE, 2022).

The growing advances of the industrial revolution, mainly in the 19th century, boosted a current fast-paced lifestyle and the use of new technologies, all of this has influenced a greater demand for processed foods and drinks, which have a high acid content their compositions, such as boxed juices, soft drinks and processed foods and canned, having the potential to generate negative consequences for the dental structure, so that causes great wear and tear, accompanied or not by painful symptoms, indicative of anxiety, stress, bruxism, inadequate brushing, gastroesophageal problems, practice of some specific sports and poor sleep quality are also etiological factors closely linked to this pathology (LIRA and DURÃO, 2022).

Other etiological factors associated with SEPB are also cited, sleep disorders, psychological disorders, orofacial pain, hyposalivation (associated with medications or problems systemic) and gastroesophageal disorders. Psychological disorders such as anxiety, depression, obsessive compulsive disorder (OCD), among others, may be etiological factors for the development of non-carious diseases. The literature has shown that even patients with excellent oral hygiene conditions may present LNC, which are very prevalent in patients with psychological disorders. Thus, once the etiological factors are known, aforementioned, from the EPB, it is worth highlighting that the dentist (CD) has an important role in early diagnosis of the lesions that make up the EPB, and should intervene with clinical management appropriate care of the patient, investigating the etiological factors of the lesions, to control and prevent recurrence of the same, ensuring longevity of the treatment (CARVALHO, 2023).

This topic was selected because it highlights the importance of understanding this new pathology. which is increasingly present in today's society. Thus, the grouping of information selected here will contribute to the scientific community, professionals in the field and as well as for society by presenting a study that will serve as a form of consultation for possible clarification of matters that encompass the topic.

2. THEORETICAL FRAMEWORK

Silva & Labuto (2022), point out that oral aging is characterized by appearance of pathological conditions typical of aging, which is a result of the many changes suffered by the body, which leaves the mouth prone to being impacted by damage

chemists\mechanics, highlighting that the mouth generally reflects the conditions in which these people lived. In this case, it can be said that normal aging of the oral cavity is associated a: Cavities, periodontal disease, tooth wear, loss of teeth, xerostomia, reduced taste, soft tissue injuries, joint problems temporomandibular joint (TMJ), reduced salivary flow and even the presence of more viscous saliva. These clinical manifestations are commonly observed and expected with advancing age. of the individual, as it is natural. Therefore, this condition of oral aging was predominantly found in elderly patients.

However, it can currently be seen in patients aged between 25-30 years, which in this case, deviates from the conventional standard and is treated as a pathological condition. Premature Oral Aging (EPB) can be seen in approximately 30% of Brazilian populations. of young people aged at least 25 years. The EPB shows the same symptoms in young patients deleterious manifestations/conditions found in the elderly. The smile with appearance old woman with a young face can present itself in different ways (DOS SANTOS & CONFORTE, 2022).

Because of this, the last three decades have raised concerns in the community dental, mainly due to changes in eating habits and lifestyle accelerated and harmful behaviors, which are causing damage to the mouth and the entire system stomatognathic in increasingly younger patients. With increasing life expectancy, especially in developed and underdeveloped countries, such as Brazil, the maintenance of oral health is essential to improve quality of life and prevent comorbidities, increase self-esteem, in addition to improving chewing, speech and social interaction (PEREIRA *et al,* 2021).

The current era has several technologies, which can generate constant physical pressure and emotional, increasingly leading to an increase in anxiety and stress levels, depression (aggravated by the Covid-19 pandemic), poor eating habits (diet unbalanced and fad). Years ago, concerns about the population's oral health focused on cavities and periodontal diseases. However, over the years, new pathologies were included as responsible for premature aging of teeth, among they: attrition, abfraction, abrasion and erosion, thus composing the LCNC, it can also include the dental hypersensitivity, recession and other consequences thereof (PINHEIRO *et al,* 2021).

3. MATERIAL AND METHOD

The methodology adopted was a narrative review, mostly qualitative, of the literature, based on the book "Síndrome do Envelhecimento Precoce Bucal" (SOARES *et* al., 2023), and bibliographic research in articles, proceedings and scientific journals. The

database in the electronic medium: Google Scholar, using the keywords: premature oral aging, tooth wear and mental disorders, in Portuguese and English.

Approximately 405,460 articles were found in the search for aging premature *oral aging,* 814,800 articles in the search for tooth *wear* and 4,473,000 articles in the search for mental disorders , from which it was defined as inclusion criteria scientific research that delimits the objectives of this work and order relevance of the articles, and articles that do not address this topic, are incomplete and abstracts. Therefore, 5 articles on early *oral aging/ premature* were selected *oral aging,* 18 articles on tooth wear *and* 7 articles on mental disorders/ *mental disorders,* in addition to 17 articles found in the bibliographic databases of those pre-selected that fit the inclusion and exclusion criteria of the work, totaling 47 articles and 1 book, used in total.

4. RESULTS AND DISCUSSION

Etiologies of premature oral aging

ÿ Sleep quality and mental disorders

Poor sleep quality and related disorders are very important factors when associated with tooth wear, causing LNC, tooth wear and dysfunction temporomandibular joint (TMD) 1 generating characteristics of oral aging in the patient. The association between psychopathology and psychological distress in sleep disorders is bidirectional. This that is, both mental disorders affect the occurrence of sleep disorders, and these are related to the occurrence of mental disorders. The young population has been showing higher rates of sleep disorders and mental disorders correlated with stress, anxiety, depression, bruxism and TMD (MARTINS & KUHN, 2013).

A study conducted by Verris *et al* (2008) distributed 101 questionnaires to a population of young adults, between 17 and 28 years of age, and highlighted that the increase in the degree of disorder in the (TMJ) leads to a worsening of sleep quality and vice versa; that more than 80% of individuals have TMD to some degree and that around 50% have a TMD Index Pittsburg Sleep Quality Inventory (PSQI) with poor quality sleep.

In addition to poor sleep quality, psychosocial factors can also cause TMD and disorder throughout the patient's Stomatognathic System. Studies indicate that etiology could be of psychophysiological origin. The most studied emotional factors capable to influence the development of TMDs and responsible for parafunctional habits of

muscle tension are anxiety and stress, which in some cases present themselves as factors etiological, in others as a consequence of TMDs or even independently of the dysfunction and are not correlated with these factors, therefore any occurrence that may increase activity basic muscle or tone, such as orofacial pain, occlusal interferences, tensions, may be caused of functional disorders and pain in the TMJ and adjacent muscles. Therefore, it is very likely that emotional disorders play an important role in TMJ (ESGALHA, 2009).

Toledo *et al* (2008) conducted a study that evaluated the association between the degree of depression with the presence and severity of TMD with 56 individuals of both genders, among 19 and 41 years old, to assess the presence and severity of TMD and the degree of depression and proved that depression can be considered as one of the etiological factors of TMD and that it is more predominant in the female gender.

Oliveira (2017), based on a literature review and a clinical case report on the relationship between TMD, stress and anxiety, highlighted that emotional factors such as anxiety and stress are directly linked to the signs and painful symptoms of TMD, being essential an interdisciplinary approach so that treatment with CD is effective.

In fact, this habit can occur in different age groups and manifests itself in two ways: different forms: waking bruxism, which occurs during the day when the patient is awake, and sleep bruxism, which occurs during the night. The first is related with external psychosocial stimuli, while the second is related to the dysfunction of the neuromotor center, with regard to the pathophysiology of bruxism, although unknown, many studies indicate that its cause is multifactorial, involving aspects biological and psychosocial factors, such as genetic predisposition, lifestyle and emotional state (Alencar *et* al., 2020).

From this perspective, the combination of external and psychological factors such as anxiety can have consequences for individuals. From this perspective, despite the physical changes unpleasant and apprehensive feelings, anxiety and depression is an emotional state in itself of human experience, natural, necessary for self-preservation and characterized by changes behavioral and neurovegetative. This condition becomes pathological when it occurs intense and frequent manner with symptoms that can cause suffering and impairment in daily life (LEÃO et al., 2018).

Wagner *et al* (2019), carried out a study with 162 military firefighters from a barracks in city of Rio de Janeiro, Brazil and concluded that moderate and severe anxiety symptoms were associated with awake bruxism. According to a case-control study conducted by Yaÿci, *et al* (2020), with 200 individuals treated at the Kars Oral and Dental Health Center, in

Türkiye, anxiety questionnaire scores were higher in the bruxism group in comparison with the control group.

TABLE 1: Summary of articles related to sleep quality and mental disorders.

AUTHORS/YEAR	MAIN FINDINGS
Alencar, LB *et* al., 2020; Yaÿci I, Taÿdelen Y & kivrak y, 2020.	Such studies understand that poor sleep quality and factors such as anxiety, stress and depression are very important factors when associated with tooth wear, causing non-carious lesions, tooth wear and temporomandibular dysfunction (TMD).

Source: Own authorship (2025)

ÿ Sports dentistry

Sports dentistry, a specialty recognized by the Federal Council of Dentistry (CFO), since 2015, grows and consolidates itself every day in Brazil, with research scientific, clinical and statistical evidence that guide the evolution of this new area of dentistry. This new segment of dentistry brings together the various areas of knowledge that have already established themselves in sports, such as: sports medicine, exercise physiology, physiotherapy of sports and psychology. By definition, sports dentistry is the area of expertise of the CD with the aim of investigating, preventing, treating, rehabilitating and understanding the influence of diseases of the oral cavity in the performance of professional and amateur athletes, with the purpose of improve sports performance and prevent injuries, considering physiological particularities of the athletes, the modality they practice and the rules of the sport (BARBERINI, 2016).

The systematic review carried out by Needleman *et al* (2015), based on 39 studies, concluded that oral health was consistently poor across all studies, tooth decay, periodontal disease, tooth erosion and pericoronitis (infections around the wisdom teeth) impacted third molars have been widely reported. The proportion range of athletes affected by these conditions was dental caries 15–75%, moderate to severe periodontitis up to 15%, dental erosion 36–85% and pericoronitis/impacted third molars 5–39% and dental trauma was reported by 14–57% of athletes in high-risk sports. Furthermore, it was highlighted that such Oral diseases can directly affect an athlete's performance with clear oral and psychosocial factors, such as pain, increased systemic inflammation, and decreased confidence and socialization.

Oral health is a vital component of our physiological and psychological well-being. However, current statistics reveal an alarming prevalence of oral diseases on a global scale, most of which are preventable if detected early. Known for their high fitness levels, athletes are not immune to oral health problems. In in fact, they represent a population particularly vulnerable to certain oral health injuries,

that were exacerbated by sports-related oral health risk factors. These risks include hyposalivation and harmful eating habits during sporting exertion, dental traumatology, high-intensity training, self-medication and lack of prioritization oral health care (BUDD and EGEA, 2017).

Hyposalivation is defined as an objective reduction in salivary flow. Often, The concepts of hyposalivation and xerostomia are confused and interchanged. Xerostomia is defined as a subjective sensation of “dry mouth”, it can often coincide with a salivary flow low (hyposalivation). However, many patients experience a “dry mouth” sensation with a low flow normal salivary. As a result of hyposalivation, it affects saliva which has a capacity buffer and defense against bacterial agents, in addition to maintaining the pH of the oral cavity and promoting the mineralization of teeth. It is also through saliva that we are able to expel some substances from the mouth and with their reduced quantity this effect is impaired. In addition to everything that is, saliva provides antimicrobial activity via several proteins and therefore inhibits colonization of fungi and bacteria. During sports, saliva production decreases and there is a tendency towards oral breathing, which means there is even less saliva in the oral cavity, consequently increasing the likelihood of tooth decay and many other conditions related diseases (NIKLANDER *et al.,* 2017).

Decreased salivary flow and changes in saliva cause a significant change in oral cavity. It can be manifested by an increased number of cavities, susceptibility to oral candidiasis, burning mouth, sore tongue, difficulties in speaking, chewing and swallowing, changes in taste and halitosis. The decrease in saliva and consequently its factors protectors, significantly increases the risk of erosion and tooth decay through infections opportunists. Secretory IgA (S-IgA) constitutes the main immunoglobulin isotype found in saliva and is considered the host's first line of defense against pathogens that colonize or invade the oral cavity (PINHEIRO *et* al., 2019).

Buczkowska-Radliÿska *et al* (2013), based on a study, proved that erosion dental disease was found in more than 26% of competitive swimmers and 10% of swimmers recreational. Injuries in competitive swimmers occurred on the vestibular surfaces and palatines of the anterior teeth, while erosions in recreational swimmers developed exclusively on the palatal surfaces. Although the pH of the pool water was neutral, it was undersaturated in relation to hydroxyapatite, which may be one of the major causes of the reduction in Oral pH.

Rowing is a sport in which its practitioners frequently report problems. in oral health, due to the use of supplements and isotonic drinks, tendency to eating disorders due to requirement of weight control and the clenching of teeth caused by the constant activation of the

masticatory muscles during sports activity. Dental results revealed a significant number of rowers with oral breathing pattern (46.7%), with a history of occlusion (65.8%), with occlusal parafunction of bruxism (33.3%) and with noise and/or pain in the TMJ (20.8%). The use of supplements and isotonic drinks (48.3%) and the incidence of gum bleeding (30.83%) are also relevant findings (CEDRO *et* al., 2023).

An analytical cross-sectional study, carried out by Alemida *et al* (2023), with 312 people practitioners of *crossfit,* Olympic weightlifting, *powerlifting* or *strongman* highlighted that teeth clenching during training was reported by 31.4% of participants; 13.5% reported having developed bruxism after starting to practice sports, and 18.2% noticed changes in their teeth after starting physical activities in their respective sports; 21.7% of participants reported experiencing headaches in the temporal muscle region after carry out their training and 16% of people said they felt pain in the head and neck region during the execution of some exercises. Significant relationships were also found between reports of changes in the stomatognathic system and painful sensations during the execution of certain exercises, as well as reports of post-workout headaches.

It has been proven that elite athletes who compete in weight-sensitive sports and aesthetics, are more susceptible to developing eating disorders, due to the need to fit into a competition standard and reduce, particularly weight, in sports such as boxing, horse riding, gymnastics and long-distance running (SUNDGOT-BORGEN *et* al., 2013). anorexia nervosa (AN), bulimia nervosa (BN), anorexia athletica (AA) disorders were evaluated in athletes and concluded that the prevalence is higher in athletes than in controls, higher in female athletes than in male athletes, and more common among those who compete in lean and weight-dependent sports than in others sports (SUNDGOT-BORGEN and TORSTVEIT, 2004).

TABLE 2: Summary of articles related to sports dentistry.

AUTHORS/YEAR.	**MAIN FINDINGS.**
Cedro, Wellington Lima *et* al., 2023; Pinheiro, MR *et* al., 2019.	Studies highlight that the practice of some sports can influence the appearance of some recurring characteristics of EPB, such as oral breathing pattern, malocclusion, occlusal parafunction of bruxism, noise and/or pain in the TMJ and others, in addition to causing hyposalivation and caries.

Source: Own authorship (2025)

ÿ Gastroesophageal diseases

Gastroesophageal reflux disease (GERD) can be defined as a condition chronic resulting from the retrograde flow of part of the gastroduodenal contents into the esophagus and/or

organs adjacent to it, causing a variable spectrum of esophageal symptoms and/or signs and/or extra-esophageal, associated or not with tissue lesions, linked to some risk factors, such as: high body mass index, smoking, alcoholism, stress and fatigue, small space time between eating and lying down, working in a bent position, excessive food consumption and hiatal hernia, which can lead to a reduction in quality of life and a worrying percentage morbidity (10% to 15%). The diagnosis requires confirmation with different tests, upper digestive endoscopy and esophageal pH monitoring are the most sensitive diagnostic methods. clinical treatment is useful in controlling symptoms; however, the big problem is maintaining the asymptomatic patients over time. Surgical treatment is indicated for patients who required continuous drug use, drug intolerant and with complicated forms of GERD (FRAGA *et al.,* 2012).

According to a rigorous methodology to diagnose and treat such disease, the Montreal Classification of GERD that provides a definition, classification and guidelines for universally accepted treatment. This classification is divided into: esophageal syndromes and extra-esophageal syndromes. Esophageal syndromes include patients with symptoms in which signs considered typical are included. They may be accompanied by injury to the esophageal mucosa, therefore, in order to confirm the diagnosis, endoscopy is used digestive and histology. Extra-esophageal ones were divided into: established associations and proposed associations. The first are gastroesophageal reflux cough syndrome, gastroesophageal reflux laryngitis, gastroesophageal reflux asthma syndrome. As for the that have proposed associations are included: pharyngitis, sinusitis, idiopathic pulmonary fibrosis and recurrent otitis media (VAKIL *et al.,* 2006).

Anorexia nervosa (AN) and bulimia nervosa (BN) are related disorders, with the etiology unknown, which most commonly begin in adolescence in women, have symptoms unique and intriguing, such as restricted eating or binge eating behaviors, distortions of body image, denial of weight loss, and resistance to treatment. In AN, an inexplicable fear of weight gain and an obsession with fat, even in the face of intentional withdrawal from food or hunger strike, are responsible for a course prolonged with extreme medical and psychological morbidity. BN, on the other hand, generally appears after a period of dietary restriction, which may or may not have been associated with weight loss. Binge eating feeding is followed by self-induced vomiting and/or some other means of compensation for excess food intake, it is important to highlight that around 25% to 30% of bulimics have a previous history of NA (KAYE, 2008).

The oral manifestations caused by BN are very varied, in degrees and types, these are the first changes that may appear, evolving approximately six months after

a person consistently engages in deleterious eating behaviors, mainly those associated with self-induced vomiting, the main characteristics related to hard tissues in the oral cavity are dental erosion, dental sensitivity and increase in the caries rate. In soft tissues, the most frequent are mucositis, angular cheilitis and gingivitis. Therefore, it is important to emphasize that, due to their relationship direct contact with the oral cavity, the CD may be the first health professional to suspect BN, due to changes involving the entire oral and maxillofacial complex, and can diagnose early, allowing the patient to be guided towards medical treatment. adequate dental care, thus preventing the progression of the disease (JUNIOR *et al,* 2012).

Authors Park & Mandel (2006) observed that patients with BN generally have dental erosion due to regurgitation (which consists of the reflux of food from the esophagus or stomach, without nausea or violent contractions of the abdominal muscles.). But they may also present with asymptomatic bilateral parotid hypertrophy and this finding can serve as a differential diagnosis, since there are reports of such occurrences in 10% to 66% of patients.

Valena V & Young WG (2002), selected 30 cases and described the nature of dental wear and most affected areas in situations of frequent regurgitation and correlated such wear to that caused by acids of extrinsic origin and vomiting. In addition Furthermore, they evaluated the distribution of erosion by age group and sex. They concluded that while incisal edges of the upper and lower anterior teeth of acid regurgitators were more frequently affected by erosion, incisal fatigue was more common in control teeth. Lesions Cervical fractures were more commonly found in association with incisal friction in the control group and in association with incisal erosion in the case group. allows a distinction to be made between dental lesions erosives of patients with bulimia nervosa and gastroesophageal reflux with those who present tooth wear due to extrinsic erosion.

Junior *et al* (2012), presents through 12 articles, the clear relationship between dental erosion caused by intrinsic acids and the teeth involved, confirming the greater involvement of the arch upper dental (75%), as well as anterior teeth (91.6%) of the oral cavity.

In 1995, SCHROEDER *et al.* conducted a study to determine the relationship between gastroesophageal reflux and dental erosion, for this, they measured the pH for 24 hours of the esophagus, into two groups: dental group, which had 12 patients with dental erosion idiopathic and the gastroenterology group which was composed of 30 patients (10 did not present reflux, 10 had distal reflux and 10 had proximal reflux). They concluded that the Dental erosion is a common finding in patients who present with reflux and vice versa, being this, an atypical manifestation of the disease (SCHROEDER *et al.,* 1995).

Lazarchik &|Filler (1997), stated that chronic exposure to gastric acid has several causes, which can cause injuries to hard and soft tissues of the oral cavity, ranging from minor soft tissue irritations to severe tooth destruction resulting in dysfunction masticatory and requiring extensive restorative treatment. They also stated that erosion can be considered the main oral manifestation of gastroesophageal reflux. In However, its diagnosis is difficult, as non-carious lesions have a multifactorial etiology and factors how the quality of saliva can interfere in the process.

Lesions at periodontal levels are very recurrent in patients with GERD, therefore disease causes directly or indirectly harmful changes in the oral cavity, sometimes in cases reduced salivary flow and limited swallowing capacity, sometimes due to poor control of bacterial plaque and poor oral hygiene, which can lead to periodontitis through a altered salivary function and a microbiota colonization by GERD that differs from the flora (commensal) of the oral cavity, thus generating a greater rate of propensity and susceptibility to periodontitis and diseases linked to it, such as high blood pressure, tooth mobility, gum recession and hypersensitivity (PIMENTA, 2020).

Munoz *et* al., (2003), sought to evaluate the prevalence of dental and periodontal lesions in patients with gastroesophageal reflux, from a prospective study between April 1998 and May 2000 at the Gastroenterology Service of the University Hospital of Clinics in Valencia, Spain. They concluded that dental erosion should be considered a Extra-esophageal manifestation of gastroesophageal reflux and the fact that the prevalence of caries and periodontal lesions are similar in patients with gastroesophageal reflux disease and in healthy volunteers suggests a lack of relationship with gastroesophageal reflux disease.

Helicobacter *pylori* (HP) is a bacterium that colonizes the stomach and can cause ulcers duodenal or gastric, it has the ability to aggregate with *Fusobacterium nucleatum* bacteria and *Fusobacterium periodonticum,* colonizers recognized for appearing in the initial stages and late in periodontal patients. Inflammation of the periodontium will help in the colonization of these species in the subgingival biofilm, causing periodontal pockets, which will be a niche for future recolonization and reinfection of the gastric mucosa. The presence of HP in dental plaque can also originate from gastroesophageal reflux (SUJATHA *et* al., 2015).

Study carried out by Corrêa *et al.,* (2008), after evaluating 100 patients; classified into two groups of 50 people, with group 1 consisting of individuals with GERD symptoms and 2 (control), of individuals without such complaints; they concluded that these individuals (group 1) had a higher incidence of dental erosion, canker sores, burning mouth, tooth sensitivity and fewer carious lesions than those who did not have the disease.

Increased tooth decay can also be seen in endocrine disorders such as Sjogren's Syndrome, which is related, among other things, to low salivary volume, which reduces the ability of saliva to dilute dietary sugars, compromising the ability oral pH balance buffer and other factors (URSE, 2014).

TABLE 3: Summary of articles related to gastroesophageal diseases.

AUTHORS/YEAR.	MAIN FINDINGS.
Pimenta, 2020; Junior *et* al., 2012.	These authors agree that GERD directly or indirectly influences harmful changes in the oral cavity, with dental erosion being the main clinical characteristic; however, there are also manifestations in soft tissues (periodontal).

Source: Own authorship (2025)

ÿ Acidic diet and nutrition

There has been a reduction in the prevalence of carious lesions in recent years; on the other hand, individuals of all ages, including younger people, are increasingly presenting with NCCL. This was aggravated, among other reasons, by changes in the population's eating habits. worldwide, who began to consume more processed foods, including soft drinks, fruit juices and yogurts (NUNN JH *et* al., 2003).

The exaggerated increase in consumption of these foods is a potential for development of some diseases in the oral cavity, as is the case, more specifically, of dental erosion, that is, in this situation it will be influenced by extrinsic factors. And these groups of food are being increasingly commercialized and in the last 10 years there has been an increase of 56% and an average growth of 2 to 3% per year. In addition, the consumption of fruits and juices with acidic contents are higher in tropical countries like Brazil. (ROITHMANN, 2018).

The intraoral flora does not produce the acids that cause NCCL, but these come from some sources that include diets rich in foods acids, which can be very harmful to the health and integrity of the tooth structure. (IMFELD, 1996).

Tropical countries are places where the recommendation for fluid intake is higher accentuated, in addition, there is a great diversity of fruits in our flora, in addition to enormous availability of drinks on the market, and this may have great possibilities for the emergence of cervical injuries being related to one of them. The consumption of citrus fruits more than twice a day offers a 37 times greater risk of developing erosion lesions than when there is no such intake. However, the consumption of apple cider vinegar offers a 10 times greater risk, drinks for athletes 4 times higher or soda 4 times higher, if consumed daily. The advancement The rate of loss of dental tissue is 1 micrometer per day. (SOBRAL., *et al* 2000).

Grando *et al.,* (1995) in their research demonstrated that the average pH values of lemon, cola and guarana soft drinks are respectively 2.5, 2.6 and 3.3. Studying in vitro erosion caused by these drinks in deciduous teeth, obtained results that all analyzed products are potentially erosive, with greater losses of calcium and phosphate inorganic lemon juice, cola-type soda and guarana respectively.

It is necessary to clarify that the way in which the acid reaches the oral cavity will contribute in different ways to wear and tear. Eat lemon with your main meals (such as salad dressing), when there is a significant increase in salivary flow, reaching pH 7.8, accompanied by other foods rich in calcium and oily for example or drinking a juice Citrus juice through a straw and without rinsing are methods that help reduce damage to tooth surfaces. The constant consumption of super-acidic or fruit-flavored candies citrus fruits has a strong potential for the appearance of erosion, and a risk for the development of cavities, if with sugar. Some hard candies (held in the mouth until dissolved) have the potential erosive similar to that of soft drinks. (OLIVEIRA., *et al* 2022).

Brushing immediately after consuming citrus fruit juices should be avoided as the enamel is disorganized and can be easily removed by abrasion during oral hygiene, recommending prior mouth rinsing with an alkaline solution. (Sobral *et al.,* 2000).

However, according to Nolasco *et* al., 2023 and Bhola *et* al., 2023, erosive tooth wear is a multifactorial condition resulting in the loss of dental hard tissue, caused by a process chemical and mechanical. Wait a while before brushing your teeth, will not prevent wear, since the tooth surface has already undergone the chemical process caused by the acid, so this time will not make the affected area disappear with the damage.

TABLE 4: Summary of related articles on diet and acidic eating.

AUTHORS/YEAR	MAIN FINDINGS
Sobral., *et al* 2000. Nolasco *et* al., 2023. Bhola *et* al., 2023.	According to Sobral *et al.,* 2000, the proximity between the ingestion of acidic foods and tooth brushing can influence the process of tooth wear. However, according to Nolasco *et* al., 2023 and Bhola *et al.,* 2023, it will not make any difference to wait a certain amount of time to brush your teeth; the wear will continue to be the same, as the toothbrush is not the primary factor in tooth wear, but rather the combination of the brush bristles, toothpaste and enamel that has undergone chemical aging.

Source: Own authorship (2025)

ÿ Association of oral hygiene and non-carious cervical lesion

Brushing your teeth is extremely important to keep your teeth healthy, and a one of its duties is the removal of dental biofilm, a process that prevents the formation of lesions carious, however, in non-carious cervical lesion, more specifically erosion, it can be harmful, as it has a great potential to remove the softened surface. NaF (sodium fluoride), F-Am and SnF2 (stannous fluoride) are important ingredients that need is present in toothpaste to help reduce wear, through the action of the fluoride ion, which will contribute with saliva to repair the enamel that is softened by the action of the acid. These, however, do not prevent dissolution, to allow sufficient formation of deposits of the type CaF2, which protects the tooth surface from the action of acid, fluoride products are necessary of higher concentration, preferably with an acidic pH, not associated with abrasives (gels and varnishes, for example), and which need to be applied to the tooth frequently, being the unstable CaF2 type deposit, if the acid is found on the surface. (OLIVEIRA., *et al* 2022).

In specific situations of patients who consume only citrus juice for breakfast, morning, it is important to guide them regarding brushing, so that it is done before eating, in this case the toothpaste will not protect against acid, as the amount of CaF2 formed on the tooth is not enough, due to the concentration of fluorides in the products, but it will prevent the brush from acting on the “softened” surface. It is important to note that this recommendation is in the case of acidic foods consumed in isolation. (OLIVEIRA., *et al* 2022).

Sangres (1976) states that changes in the structure of the gingival margin, called gum recession are linked to the type and bristles of toothbrushes, and the abrasives contained in toothpastes is the main cause of abrasion in cemento-gingival joints. enamel. Both the brush and abrasive agents often cause this damage, with predominance of gingival recession, followed by wedge-shaped erosions in the junction region cementoenamel.

Researchers have shown that brushing technique is not important for appearance of abrasive lesions. A laboratory study stated that it would take 2,500 years using a toothbrush alone to remove 1 millimeter of tooth enamel and would take 100 years of using a toothpaste and brush combination to remove 1 millimeter of enamel. combination of paste with acids produced in the same quantity would cause wear in 2 years (BARTLETT, 2007; ADDY, 2005; PIRES *et* al., 2008; SOBRAL *et al.,* 2000). In short, the best brushing technique is the one that the individual can perform, removing the most amount of biofilm, without trauma (OLIVEIRA *et* al., 2022).

Toothpastes help remove stains and other deposits, and for this reason they have in its composition abrasive agents, the quantity of abrasive particles, size, shape and amount will reveal its abrasiveness, which is called REA (relative enamel abrasivity) and RDA *(relative dentine abrasivity).* The RDA is a numerical scale that indicates the degree of abrasiveness, and will compare different toothpastes, the paste will be more abrasive if the RDA value is more high. The permitted pH in toothpastes is (4-10) which leads to thinking about tooth wear due to chemical erosion, although virtually all products worldwide have pH coefficients above the level that can cause demineralization (pH 5.5 for enamel, pH 6.5 for dentin) or alternatively the fluoride content balances the effect of low pH. Toothpastes with high RDA values increase dentin abrasion and with values similar, abrasion is greater in toothpastes with lower fluoride concentrations. Toothpastes

Fluoridated toothpastes provide greater protection against tooth wear and an interaction between fluoridated toothpastes and brushing twice a day implies a 30% decrease in erosion (PIRES *et* al., 2008; ADDY, 2005).

The force exerted on the brush, the extra soft bristles, the toothpaste together with appropriate movements that can remove the greatest amount of biofilm without trauma and the correct frequency will not traumatize the tissues, thus avoiding a possible recession gingival, and the occurrence of non-carious cervical lesions, the time of each brushing is directly linked to the effectiveness of hygiene, guidelines that should be emphasized when patient at the time of consultation (SOBRAL *et* al., 2000).

TABLE 5: Summary of articles related to the association between oral hygiene and non-carious cervical lesions.

AUTHORS/YEAR	**MAIN FINDINGS**
Pires *et* al., 2008. Bartlett, 2007. Addy, 2005. Sobral *et al.,* 2000. Sangres, 1976.	Studies report that the combination of toothpaste and toothbrush bristles can wear down teeth, but this wear would appear after 100 years. However, the combination with toothpaste and acids, used in the same quantity, would cause wear in just 2 years.

Source: Own authorship (2025)

Figure 1: pH of most consumed acidic drinks in Brazil.

Source: SOARES, et al (2023).

FINAL CONSIDERATIONS

Premature oral aging can be related to numerous etiologies, such as: poor sleep quality, lifestyle, and acidic diet. Therefore, monitoring is necessary multidisciplinary, with the CD being fundamentally responsible for identifying and directing the other professionals, if necessary. Correct diagnosis, such as signs and symptoms, is the key essential to develop an ideal and efficient treatment plan for the patient, aiming their individuality, seeking to reestablish the patient's quality of life.

Finally, this work seeks to alert the dental community about this disease. growing in today's society, so that CDs can improve their activities professionals, resulting in healthy oral health in the population.

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